REMARKS

This is in response to the Official Action of May 4, 2004. Applicant acknowledges the withdrawal of the finality of the previous Official Action of November 10, 2003. This amendment is believed to positively respond to all objections now raised by the Examiner.

The indication of allowability of claim 193 is also acknowledged. This claim has been amended to overcome the objection raised by the Examiner in paragraph 4 of the action, and also to make straight-forward amendments therein. Accordingly, it is respectfully submitted that claim 193 is allowable. In addition, newly added claims 211 – 217 depend from allowable claim 193 and therefore are also believed to be allowable.

In addition to amending claim 124 to more succinctly define the features of the present invention, which will be discussed further hereinbelow, this claim has been amended consonant with the Examiner's helpful suggestion in paragraph 6 of the action. Therefore, the rejection under 35 USC 112 is believed obviated.

Straight-forward changes have also been made in claims 125 and 128 – 130.

In addition, new claims 194 – 217 have been added, all as clearly supported herein, to further define the features of the present invention. No additional fee is believed to be required in view of previous claim submissions.

The only reference applied by the Examiner is Wilson. Applicant respectfully submits that generic claim 124 as amended is not at all taught or suggested by Wilson. Certainly also the dependent claims are not taught or suggested by Wilson.

Firstly, added features in generic claim 194 include the following clearly supported features:

- specifying a preformed cavity formed within at least one of the outer flange and rim for connection with at least one of the pretensioned spokes, and
- specifying that the deformed engagement region is formed by interaction between said spoke and preformed cavity, wherein one of the (1) preformed cavity is deformed by the spoke and (2) the spoke is deformed by the preformed cavity.

Applicant respectfully submits that the significant combination of features claimed herein is not at all contemplated by Wilson, when Wilson is fairly read, particularly the combination including the newly added features.

Significantly, Applicant submits that Wilson is not a deformed connection and that his wheel is indeed a compression spoke wheel and not a tension spoke wheel, both as required in the instant claims. These significant distinctions will be discussed below.

Wilson is not a deformed connection.

(1) During the time of the Wilson reference, it was a common construction technique to thread the spokes of a vehicle wheel directly into its hub flange. There are numerous references that can provide support for this. This common technology of the time employed a pre-threaded hole, into which the spoke was threadably fastened. This was the current state of the art of the day and there is no reason to think that Wilson would have employed a different system.

If Wilson had indeed contemplated a self-tapping or deformed connection, this would have been a sufficiently novel departure from current technology to warrant inclusion in the Wilson reference. But such a concept of a deformed connection is not discussed anywhere in the Wilson reference.

Wilson does mention that his hub flange does not have a "tendency to split" (page 1, line 88) in reference to its connection to the spokes. However, such a "tendency to split" could be caused by a wide range of forces that are experienced by a vehicle wheel during operation and does not indicate an interference fit between the spoke and the hub flange. For example, deflection of the spoke due to lateral loads during operation of the wheel could induce the spoke to pry apart the hub flange. Or else, compressive loads on the spoke (loads that tend to drive the spoke deeper into the flange) during operation could serve to wedge or split the hub flange apart.

(2) Wilson's alternative embodiment (Wilson's FIG. 5) utilizes a metallic or steel hub flange. Due to the high hardness of the steel flange, it would be impossible to create a deformed connection with a steel spoke of similar hardness. If Wilson had contemplated a deformed connection in his vulcanized fiber embodiment, the steel flange embodiment would be a significant departure in this regard. In his discussion of this alternative embodiment, Wilson makes no reference to a self-tapping or deformed connection, nor does he mention this as a factor in comparison with his preferred embodiment.

Wilson is not a tension spoke wheel.

There is a significant difference between the requisite construction of a tension-spoke wheel and that of a compression-spoke wheel. In fact, these wheels are separated into two distinct categories in the Official U.S. Patent Classification, and Wilson gives no indication that he contemplates the specific tension spoke wheel.

Indeed, it may be considered that a tension-spoke wheel is constructed to impart a pre-tension to the spokes such that, under normal use, the majority of the spokes remain in a tensioned and taught state. Spokes of tension-spoke wheels generally do not go into compression (except in unusual circumstances such as a radial impact or exceptionally high side load). In contrast, a compression-spoke wheel is constructed without any

appreciable pre-tension, and under normal use, the spokes located between the hub and the ground will be compressed to support the axle load.

The following should be considered.

(1) Wilson shows no means to pre-tension the spokes of his wheel. Indeed, there is no mention of spoke tension or of spoke pretension in the Wilson reference.

(2) There is no head or swivel shown at the connection between the spoke and the rim. It is therefore reasonable to assume that the spoke may not be turned to adjust the threaded engagement between his spoke and his hub flange. In fact, even if such a swiveling means were provided, there is no means shown to effectively rotate his spokes or to create a threaded adjustment to provide pre-tension to his spokes.

(3) If the locknuts of his FIG. 2 were intended as a means to rotatably adjust this threaded connection, then these nuts would be spaced away from the hub flange to permit a range of adjustment. Instead, these locknuts are shown to be flush up against his hub flange and are therefore unequipped to provide such an adjustment.

(4) Furthermore, in reference to these locknuts, Wilson states, "while locknuts are shown, they are not necessary". If these locknuts are merely optional, then this is further confirmation that the locknuts were not intended to be utilized to adjust spoke tension.

(5) Since they are located outboard of the hub flange, Wilson's locknuts cannot provide resistance to spoke tension loads. In fact, his inclusion of these locknuts supports the fact that Wilson is indeed a compression-spoke wheel. The face of the locknut that is in contact with the hub flange is utilized to provide a broader surface area of contact to prevent the spoke from burrowing into the hub flange due to compressive loading of the spoke.

(6) In addition, if Wilson intended that the effective span length of the spoke could be adjusted to provide spoke pretension, then a gap would need to be provided for a range of adjustment at the spoke's radially inboard end. Instead, there is no gap provided between the radially inboard end of Wilson's spoke and the threaded hole to which his spoke is engaged. This could only mean one of two things: (a) Wilson does not provide a pre-formed cavity for his spoke, but instead utilizes his spoke to pierce his hub flange and create its own cavity; or (b) Wilson's wheel is indeed a compression-spoke wheel and he depends on the fact that his spoke is bottomed-out in its mating cavity to provide resistance to compressive loading of the spoke.

(7) Further confirmation of the foregoing is provided in page 2, line 32 of the Wilson reference where he states, "while locknuts are shown, they are not necessary, as the screw holds well in the vulcanized fiber". Since the locknuts can provide only resistance to compressive loading of the spoke, this means that Wilson's spoke

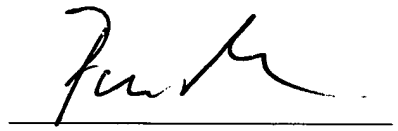
engagement serves to provide resistance to compressive loading of the spoke in the absence of these nuts. Furthermore, if these locknuts are merely optional, then this is further confirmation that the locknuts were not intended to be utilized to adjust spoke tension and that Wilson is a compression –spoke wheel.

(8) In addition to the foregoing Applicant notes that Wilson's rim is shown to be of generally flat cross section and does not have the requisite compressive bending stiffness to effectively resist spoke tension.

(9) The slenderness of Wilson's spoke does not necessarily provide indication of a tension-spoke wheel. It is quite common, even in current times, to construct a compression-spoke wheel using relatively slender spokes.

Thus, in view of the amendments presented herein and the foregoing detailed discussion, Applicant courteously submits that all claims define patentably over Wilson. Favorable consideration is solicited.

Respectfully submitted,



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Date: August 2, 2004